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HEADQUARTERS UNITED STATES ARMY TRAINING AND DOCTRINE COMMAND
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REPLY TO
ATTENTION OF

2 FEB 2009

ATFC-RL

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Common Logistics Operating Environment (CLOE) and
Condition Based Maintenance-Plus (CBM+) Policy

1. References:

- a. U.S. Army Training and Doctrine Command (TRADOC) Pamphlet 525-4-1, United States Army Functional Concept for Sustain 2015-2024, Paragraph 5-4f(4), 30 Apr 07.
- b. FM 4-30.3, Maintenance Operations and Procedures, Paragraph 1-9, 28 Jul 04.
- c. DoD Instruction 4151.22, Condition Based Maintenance Plus (CBM+) for Materiel Maintenance, 2 Dec 07.
- d. Memorandum, ASA(ALT), SAAL-ZL, 3 Oct 08, subject: Common Logistics Operating Environment (CLOE) Policy Memorandum (Encl 1).
- e. Memorandum, ASA(ALT), SAAL-ZL, 20 Mar 08, subject: Condition Based Maintenance Plus (CBM+) Policy (Encl 2).
- f. TRADOC Capability Development Document (CDD) and Capability Production Document (CPD) Writer's Guides with the embedded Logistics Supportability Guide, 6 Aug 08.
- g. Memorandum, U.S. Army TACOM Life Cycle Management Command (LCMC), AMSTA-CG, 19 Dec 08, subject: TACOM LCMC Condition Based Maintenance Plus (CBM+) Support Requirements (Encl 3).

2. The purpose of this memorandum is to endorse the ASA(ALT) CLOE and CBM+ initiatives along with the technology enablers that make these strategies possible. It also provides TRADOC guidance on developing and documenting capabilities for new and current systems utilizing the CLOE and CBM+ initiatives. These strategies are already embedded in Army Concepts and Doctrine (References a and b).

3. CLOE is working to synchronize diverse logistics efforts into a cohesive, net-centric logistics domain that provides essential logistics awareness to the Warfighter, Logistician,

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SUBJECT: Common Logistics Operating Environment (CLOE) and
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and Commander. CLOE integrates data across the full spectrum of logistics and includes equipment platforms, logistics information systems, and Command and Control systems - all functioning within a common architectural framework described in detail by TRADOC validated Army Integrated Logistics Architecture. CBM+ is the maintenance functional strategy within the CLOE program. CBM+ is a proactive equipment maintenance process that uses sensors and system health indicators to predict functional failure prior to a failure event; thereby, enabling maintenance personnel to take appropriate preemptive action. CBM+ improves equipment combat effectiveness, enhances safety, and reduces life-cycle costs.

4. To achieve interoperability on Army platforms/systems across the enterprise, including Brigade Combat Teams, requires that the Acquisition Community utilize common objectives, common data formats and common standards to minimize the need for custom application interfaces. It is mandatory that these standardized operational objectives continue to be integrated into emerging Army concepts and doctrine and be utilized by both capability developers and Program Executive Officers/Program Managers (PEOs/PMs) as they design and field these capabilities onto their platforms.

5. All **future** Joint Capability Integration and Development System (JCIDS) documentation and architecture products developed, updated, or reviewed by TRADOC must address CLOE and CBM+ as directed by DoD and Army policy. In accordance with DoD Instruction (Reference c) and ASA(ALT) Policy (References d and e), CLOE and CBM+ strategies will be designed into both new and current systems when feasible. The capabilities developer will determine if the application of CLOE and CBM+ is feasible and practical for new systems. The PM will determine if the application of CLOE and CBM+ is feasible and cost-effective for current systems based upon a Cost Benefit Analysis. The TRADOC CDD and CPD Writer's Guides, with embedded companion Logistics Supportability Guide (Reference f), delineate how to document the required/desired CLOE and CBM+ goals into JCIDS documentation. Current systems and platforms that meet feasibility criteria and are cost effective shall integrate CLOE and CBM+ strategies under the recapitalization policy for rebuilds or selective upgrades as outlined in AR 70-1, Army

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Acquisition Policy and AR 750-10, Army Modification Program. In those cases where an updated or amended CDD or CPD is required, the Writer's Guide will assist the TRADOC proponent in documenting CLOE and CBM+ goals.

6. In light of the approved CLOE and CBM+ strategies, architectures, and policies, your support is essential to implementing and delivering improved logistics capabilities to the Army to the maximum extent possible in both current and future systems. Although we are well postured to make these means a reality in the Future Force, we have much work to do with Current Force systems. Work closely with your PM counterparts when conducting cost-benefit analyses on current major platforms and assist the PMs, where the analyses warrant, in making the requisite input of CLOE and CBM+ based capabilities for those systems.

7. Links to the reference documents are provided at enclosure 4. The HQ TRADOC point of contact is Mr. David Smith, DSN 680-2901, (757) 788-2901, dave.smith@us.army.mil.

4 Encls


MICHAEL A. VANE
Lieutenant General, U.S. Army
Deputy Commanding General,
Futures

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OCT 03 2008

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Common Logistics Operating Environment (CLOE)

Over the past several years we have made great strides in moving forward with the CLOE initiative. CLOE is a full-spectrum approach to synchronize logistics concepts, architectures, organizations, and technologies into an integrated, net-centric logistics domain. CLOE documents the Army's logistics information infrastructure, from the weapon system up through the national level. CLOE will provide Warfighters, Logisticians and Commanders at all levels with logistics situational awareness, and increased unit combat power.

In order to keep this essential capability moving forward, request the U.S. Army Training and Doctrine Command publish CLOE Operational Concept Descriptions (OCDs) to describe CLOE in terms of user needs it will fulfill, its relationship to existing systems or procedures, and the ways it will be used. These OCDs will inform stakeholders on the operational concept of CLOE.

Program Executive Offices (PEOs) and Program Mangers (PMs) will continue pursuing CLOE as part of their overall system strategy. The PEOs/PMs will integrate CLOE into new weapon systems procurement; and in major system modifications and upgrades where feasible and cost effective, based upon a cost benefit analysis. The PEOs/PMs will brief their CLOE strategy as part of each weapon system's milestone, resource, and readiness review. CLOE must be rigorously pursued as part of the Logistics Enterprise, in order to realize the next generation of information tools. These tools will provide acquisition and sustainment leaders with the ability to make critical system decisions in achieving weapon systems availability and readiness goals.

My point of contact is Mr. Matthew Adams, (703) 604-7448, or e-mail: matthew.adams14@us.army.mil.

Dean G. Popps
Principal Deputy Assistant Secretary of the Army
(Acquisition, Logistics and Technology)

Encl 1

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DEPARTMENT OF THE ARMY
WASHINGTON DC 20310-0103

March 20, 2008

SAAL-ZL

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Condition Based Maintenance Plus (CBM+)

The U.S. Army is fully engaged in implementing CBM+ as a critical capability necessary to improve availability and reduce total ownership cost.

In August of 2005, at the request of the Deputy Chief of Staff, G-4, the Army Acquisition Executive directed the U.S. Army Training and Doctrine Command (TRADOC) to require CBM+ capabilities in all new equipment, weapon systems and information systems capability documents as part of a strategy to accelerate the transformation of existing maintenance processes and technology insertion to keep pace with the rapid changes being made in the United States commercial marketplace. Over the last three years, we have made significant progress in implementing this essential capability.

Recently, the Under Secretary of Defense (Acquisition, Technology and Logistics) published a new Department of Defense Instruction, Subject: Condition Based Maintenance Plus (CBM+) for Materiel Maintenance; Department of Defense Instruction 4151.22. The Department of Defense has emphasized the importance of CBM+ as the primary reliability driver in the Total Life Cycle Systems Management supportability strategy.

Towards this end, I am directing that Materiel Developers accelerate efforts to incorporate CBM+ concepts and technologies in the design and development of new equipment and major weapon systems, and planned upgrades where it is feasible and cost-effective based upon a cost benefit analysis conducted by the Program Managers. I am also requesting the TRADOC in coordination with the Deputy Chief of Staff, G-4 assess in the TRADOC Capabilities Needs Analysis the need for CBM+ capabilities as part of the future force logistics Joint Capability Area and determine prioritized capability gaps and any developmental priorities associated with the force's ability to accomplish CBM+.

"Together we can provide the warfighter with the very best commercial practices and technologies that United States industry has to offer."

Encl 2

The point of contact is Mr. Steven Karl, commercial (703) 604-7448, DSN 664-7448, or e-mail: steven.karl@us.army.mil.



Dean G. Popps
Acting Assistant Secretary of the Army
(Acquisition, Logistics and Technology)

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REPLY TO
ATTENTION OF

AMSTA-CG

19 December 2008

MEMORANDUM FOR Brigadier General Kevin A. Leonard, Deputy Chief of Staff, Logistics and Operations, G3, U S Army Materiel Command, 9301 Chapek Road, Fort Belvoir, VA 22060-5527

SUBJECT: TACOM LCMC Condition Based Maintenance Plus (CBM+) Support Requirements

1. The implementation of CBM+ will have a significant positive impact on fulfilling the promise of generating combat power at will for the ground system combatant commanders. Support for its development and fielding is essential to maximizing the Army's effectiveness in fulfilling its central mission. In order to accomplish this objective, AMC must lead this effort to ensure that objectives are understood and met.
2. The TACOM LCMC recognizes CBM+ as an Army-level process that the community needs to adopt and follow. While much of what's being recommended has already been seeded and is starting to take root, its survival is by no means assured. From the TACOM LCMC perspective, sustained coordination of the efforts being proposed, to include explicit formal requirements and the commensurate funding to implement changes, will provide the evolutionary growth required to meet the long term goals being set for reform.
3. We are committed to fulfilling our responsibilities in achieving the CBM+ vision, but we cannot achieve it alone and require the leadership of the headquarters. The following areas are specifically identified as key support elements we need for a successful implementation:

- CBM+ Requirements Definition

All requirements should support and be defined with the involvement of, and acceptance by, the user community. Two actions must be accomplished before ground systems can go much further. One is for TRADOC to ask the Combatant Commanders to weigh in on their need for more information to support their fielded ground equipment. Second, in support of the response, is a follow on action for TRADOC to sign key concepts as described in the Common Logistics Operating Environment (CLOE) Operational Capability Descriptions (OCDs) 1 and 2. These documents must be agreed upon by all stakeholders.

- Economic Analysis Support

Current policy requires a business case to support CBM+ implementation on fielded equipment. Army-wide business-case and cost-benefit analyses need to be performed in order to justify CBM+ implementations. AMC must coordinate the Science and Technology resources that are available now for health monitoring on fielded equipment that everyone can use. While these will not necessarily be robust or the final solution, we can't make the case or get Combatant Commander buy-in without demonstrating a capability to the user.

- Key CBM+ Elements

The following summarize the needs for key CBM+ focus areas:

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SUBJECT: TACOM LCMC Condition Based Maintenance Plus (CBM+) Support Requirements

CBM+ Data Collection Development and Support

Where appropriate, Army-wide common and platform-specific CBM solutions need to be developed including hardware sensors, software diagnostic/prognostic algorithms, and platform data and health management systems. Future Combat Systems (FCS) should be required to spin-out common sensors that can translate to our next generation Stryker, Abrams, Bradley, JLTV, Paladin and other Combat Service Support equipment.

CBM+ Data Transmission Development and Support

A critical need exists for Army-wide secure and reliable bi-directional data transmission between platforms, storage, and end-users with sufficient performance.

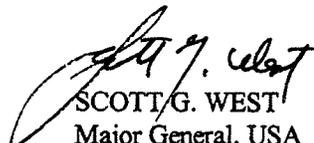
CBM+ Data Storage Development and Support

CBM+ data is of primary importance in making sound decisions. AMC needs to develop an Army Portfolio Management system to ensure that the data is secure, reliable, readily accessible, and with sufficient capacity to support all CBM+ storage needs.

CBM+ Analyses Development and Support

Comprehensive data analyses drive critical decision making and system improvements efforts. Common Army-wide analysis tools and processes are the enablers needed by both the warfighter and the life cycle managers to build and continually improve software diagnostic/prognostic algorithms and sensor integration. These software algorithms and sensors aid in critical decision-making to improve operational availability.

4. CBM+ implementation will impact logistics as it is known today and should be considered in all analyses. The Army community must continually search for opportunities to implement common, cost-effective CBM+ solutions that benefit all. TACOM will do its part to leverage the solutions across all of our platforms.
5. The TACOM LCMC is committed to providing our commanders with the ability to plan and execute with the assurance that their equipment will make it through the mission. Achieving these goals can only be met through leadership and the combined and coordinated efforts of the Army-wide organizations supporting the development and implementation of the CBM+ initiatives.
6. The TACOM LCMC POC/staff lead for CBM+ is Ms. Catherine Jackson, AMSTA-LC-LPIJ; email: Catherine.Jackson@us.army.mil; phone: 586-574-4136.


SCOTT G. WEST
Major General, USA
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Mr. Kevin, Fahey, Program Executive Officer, Combat Support & Combat Service Support, 6501 East 11 Mile Road, Warren, MI 48397-5000

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19 December 2008

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Copy Furnished (continued):

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Mr. Scott Davis, Deputy Program Manager (Platforms), Program Management Office, Future Combat Systems (BCT), 6501 East 11 Mile Road, Warren, MI 48397-5000

Dr. Grace M. Bochenek, Director, Tank-Automotive Research, Development & Engineering Center, US Army Research, Development & Engineering Command, 6501 East 11 Mile Road, Warren, MI 48397-5000

Ms. Janet Bean, Executive Director, Integrated Logistics Support Center, US Army TACOM Life Cycle Management Command, 6501 East 11 Mile Road, Warren, MI 48397-5000

REFERENCE Links

1. Reference a is available at :
www.tradoc.army.mil/tpubs/pams/p525-4-1.doc
2. Reference b is available at:
[www.army.mil/USAPA/doctrine/8 Series Collection 1.html](http://www.army.mil/USAPA/doctrine/8%20Series%20Collection%201.html)
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